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10/551,149

09/29/2005

Hidetoshi Kitaguchi

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02/06/2009

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EXAMINER

STEELE, JENNIFER A

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

02/06/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/551,149 | <b>Applicant(s)</b><br>KITAGUCHI ET AL. |  |
|                              | <b>Examiner</b><br>JENNIFER STEELE   | <b>Art Unit</b><br>1794                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 1-19 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation "one of which constitutes 20 to 80 weight percent and the other constitutes 80 to 20 weight percent" in claim 1. There is insufficient antecedent basis for this limitation in the claim. It is not clear which compound is "one" and which compound is "the other".

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

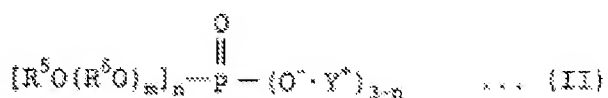
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**2. Claim 1-3, 5-13 and 15-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata et al (US 6,436,855) in view of Seugnet (US 4,118,327).**

Claim 1 describes a water permeable agent for fiber comprising a

- quaternary ammonium salt (A) represented by the following formula (I):
  - $(R^1, R^2, R^3)N^+ - R^4-X^-$
  - Wherein each of  $R^1$  and  $R^2$  is independently a  $C_8$  to  $C_{18}$  aliphatic hydrocarbon group
  - Each of  $R^3$  and  $R^4$  is independently a hydrogen atom,  $C_1$  to  $C_3$  aliphatic hydrocarbon group, or  $C_1$  to  $C_3$  hydroxyalkyl group
  - And X is an ionic residue selected from the group consisting of halogen ions, nitrate ion, acetate ion, methyl sulfate ion, ethyl sulfate ion and dimethyl phosphate ion;
- and a phosphate salt (B) represented by the following formula (II)



- 
- Wherein  $R^5$  is a  $C_6$ - $C_{20}$  aliphatic hydrocarbon group;
- $R^6$  is an ethylene and/or propylene group;
- m is an integer from 2 to 15;
- Y is an ionic residue selected from the group consisting of hydrogen ion, sodium ion, potassium ion, ammonium ion, diethanol ammonium ion, and triethanol ammonium ion;

- and n is an integer from 1 to 2;
- one of which constitutes 20 to 80 weight percent
- and the other constitutes 80 to 20 weight percent of the total said quaternary ammonium salt (A) and said phosphate salt (B)

Iwata teaches a fiber finishing agent that produces a hydrophilic fiber that excels in high-speed processing using in water absorbing commodities such as disposable diapers, hygienic napkins and pads for incontinence or in wiping cloths (col. 1, lines 5-14). Iwata teaches that a fiber-finishing agent containing a specific polyoxyethylene alkyl ether, a specific quaternary ammonium phosphate salt and a specific polyorganosiloxane adhering to the fiber has the effects enhancing hydrophilicity, reducing friction, static electricity and enhancing high-speed processing.

Iwata teaches a fiber finishing agent containing a component A, B and C wherein component B consists of at least one quaternary ammonium phosphate salt and is shown as having a structures in item (2) and described in the comparison table that follows.

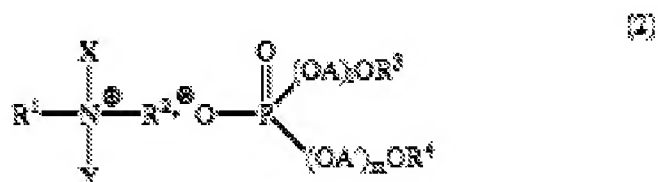
Iwata differs from the current application and does not teach two of the quaternary ammonium groups are long chain aliphatic hydrocarbons. Iwata teaches that when the number of carbon atoms is substantially less than 12, friction between the fibers increases which results in degradation of the fiber opening and the hydrophilicity of the fiber. A long chain alkyl group tends to make the fiber hydrophobic. Therefore, Iwata teaches that one of ordinary skill in the art could employ a combination of long chain and short chain alkyl groups motivated to produce the desired effect of attracting

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to the hydrophobic fiber and imparting hydrophilic properties. Reference to Seugnet, is also provided to show that it is known in the art to produce a quaternary ammonium salt with two long chain aliphatic hydrocarbon groups and two short chain carbon groups.

Iwata differs from the current application and does not teach an ionic residue as the quaternary ammonium salt and the phosphate salt are coupled together.

Iwata differs from the current application and teaches the structure of the phosphate salt wherein there are additional oxyethylene or oxypropylene groups.



Iwata differs from the current application and does not teach a percentage of quaternary ammonium salt compared to phosphate salt.

Seugnet teaches fabric softeners and anti-static compositions for textile treatments. Seugnet teaches that it is known in the art to utilize a combination of 2 long chain aliphatic hydrocarbon groups and 2 short chain alkyl groups in a quaternary ammonium salt compound and Seugnet teaches that ion residues such as halide ions can be used in the quaternary ammonium salt. Seugnet teaches a structure of quaternary ammonium salt as shown below.



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Seugnet also teaches employing the quaternary ammonium salts in combination with long chain alkyl phosphates. Seugnet teaches structures of phosphate salts as  $R^1O(CH_2CH_2O)_mPO(OM)_2$ , where  $R^1$  is a higher alkyl of 14 to 20 carbon atoms,  $m$  is a number from 1 to 10 and  $M$  is a hydrogetn, an alkali metal or a sodium, potassium.

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The table below maps the claimed structure and limitations with the quaternary ammonium phosphate salt of Iwata and Seugnet.

| Current Application             |   | Iwata (2)<br>(col. 2, lines 10-65)  | Seugnet<br>(col. 6, lines 1-46)  |
|---------------------------------|---|---|--|
| R <sub>1</sub>                  | C <sub>8</sub> to C <sub>18</sub> aliphatic hydrocarbon group   | R <sub>1</sub> C <sub>5</sub> to C <sub>18</sub> alkyl or alkenyl group   | R <sub>1</sub> C <sub>8</sub> to C <sub>22</sub> aliphatic hydrocarbon group       |
| R <sub>2</sub>                  | C <sub>8</sub> to C <sub>18</sub> aliphatic hydrocarbon group   | R <sub>2</sub> C <sub>1</sub> to C <sub>3</sub> alkyl group   | R <sub>2</sub> C <sub>8</sub> to C <sub>22</sub> aliphatic hydrocarbon group       |
| R <sub>3</sub>                  | Hydrogen or C <sub>1</sub> to C <sub>3</sub> aliphatic hydrocarbon group or C <sub>1</sub> to C <sub>3</sub> hydroxyalkyl group | X C <sub>1</sub> to C <sub>3</sub> alkyl group  | R <sub>3</sub> C <sub>1</sub> to C <sub>4</sub> alkyl group                        |
| R <sub>4</sub>                  | Hydrogen or C <sub>1</sub> to C <sub>3</sub> aliphatic hydrocarbon group or C <sub>1</sub> to C <sub>3</sub> hydroxyalkyl group | Y C <sub>1</sub> to C <sub>3</sub> alkyl group  | R <sub>4</sub> C <sub>1</sub> to C <sub>4</sub> alkyl group                        |
| OR <sub>5</sub>                 | C <sub>6</sub> to C <sub>20</sub> aliphatic hydrocarbon group   | (OA) <sub>1</sub> OR <sub>3</sub> OA = oxyethylene, oxypropylene<br>R <sub>3</sub> = C <sub>5</sub> to C <sub>18</sub> alkyl or alkenyl group             | R <sup>1</sup> O R <sup>1</sup> = C <sub>14</sub> to C <sub>20</sub> alkyl group   |
| (OR <sub>6</sub> ) <sub>m</sub> | R <sub>6</sub> = Ethylene and/or propylene group<br>(m noted below)   | (OA) <sub>m</sub> OR <sub>4</sub> OA = oxyethylene, oxypropylene<br>R <sub>4</sub> = hydrogen or C <sub>5</sub> to C <sub>18</sub> alkyl or alkenyl group | (CH <sub>2</sub> CH <sub>2</sub> O) <sub>m</sub> Ethylene group<br>(m noted below) |
| X                               | Ionic residue – halogen ions, nitrate ions, acetate ion, methyl sulfate ion, ethyl sulfate ion, dimethyl sulfate ion            | Iwata does not teach a residue – teaches ammonium salt and phosphate salt coupled together  | X Halide ion eg. Cl, Br; sulfate ion; acetate; hydroxide                           |
| Y                               | Ionic residue – hydrogen, sodium, potassium, ammonium, diethanol ammonium, triethanol ammonium                                  |   | M Hydrogen, alkali metal, sodium or potassium or ammonium                          |
| n                               | Integer of 1 or 2   | 1 1=1 associated with number  |  |



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|   |                    |   |                          |   |                      |
|---|--------------------|---|--------------------------|---|----------------------|
| m | Integer of 2 to 15 |   | of R <sub>5</sub> groups |   |                      |
|   |                    | m | Integer from 0 to 20     | m | Integer from 1 to 10 |

It would have been obvious to one of ordinary skill in the art to employ a quaternary ammonium salt with 2 out of the 4 groups having longer chain carbon groups motivated to attraction adherence of the compound to the fiber and improve the water-permeability of fibers and fabrics. It further would have been obvious to employ the phosphate compounds of Seugnet in the composition of Iwata motivated to improve the water permeability of the fibers and fabrics.

As to Applicant's claimed range of 20% to 80% of quaternary salt and phosphate salt, Seugnet teaches compositions of quaternary ammonium salt and phosphate salt that are applied to fabric such that the amount of quaternary ammonium salt on the fabric ranges from 0.005-0.3% by weight and the phosphate salt is present in an amount of 0.1 to 5% by weight of the total composition. The ratio of quaternary ammonium salt to phosphate salt would be approximately 5% to 95% which is outside the claimed range. As there is range of claimed compounds and long chain carbon groups which would affect the weight and the compound and subsequent weight percentages, it is presumed that the claimed range would be obtained through routine experimentation and measurement and the combination of Iwata and Seugnet presents a finding that one of ordinary skill in the art could have combined the known components with a reasonable expectation of success.

As to claim 2, Iwata teaches the phosphate salt group (B), which also includes the quaternary ammonium salt comprises 10-40% of the composition of fabric finishing agent.

As to claim 3, which claims that the R<sup>5</sup> group is a C<sub>6</sub> to C<sub>20</sub> aliphatic hydrocarbon group and the R<sup>6</sup> group is an ethylene group. Iwata teaches a structure that is substantially the same and Seugnet teaches a phosphate compound that is the same as the current application. The combination of Iwata and Seugnet would be obvious over the current Application's claimed structure.

As to claim 5 and 15, Iwata teaches the fiber finishing agent can be applied to fibers for articles such as wiping clothes and disposable diapers that are known to be nonwovens (col. 1, lines 5-14) and teaches a nonwoven fabric formed from the hydrophilic fiber (col. 3, lines 30-31).

As to claim 6, 7, 16 and 17, Iwata teaches an invention for increasing the hydrophilicity of a fiber (col. 1, lines 65-67). Iwata teaches adding the fiber finishing agent onto a polyolefin fiber (col. 5, lines 64-67). While Iwata does not specifically teach that the fiber has the property of being hydrophobic, if the purpose of adding the fiber finishing agent is to enhance the hydrophilic properties of the fiber and nonwoven fabric, then it is presumed that the polyolefin fiber taught by Iwata is hydrophobic.

As to claim 8, 9, 18 and 19, Iwata teaches the fiber-finishing agent is applied at a level of 0.1-1.5% and in the claimed range of 0.1-2.0%.

As to claim 10, Iwata teaches the quaternary ammonium salt is 10-40% of the fiber-finishing agent composition. 40% overlaps the claimed range of 40-70%.

As to claim 11, claims the quaternary ammonium salt has groups R<sub>1</sub> which contains a C<sub>19</sub> to C<sub>24</sub> and R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> have 1 to 3 carbon atoms. Iwata teaches 3 out

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of the 4 quaternary groups have carbon atoms in the range of 1 to 3. Iwata differs and teaches  $R_1$  has 5 to 18 atoms and it is not in the claimed range of 19 to 24 atoms.

Seugnet teaches prior art quaternary ammonium salts having long chain alkyl groups having 16 to 22 carbons which overlaps the claimed range.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a quaternary ammonium salt with R groups that have carbon atoms in the claimed range of 19-24 motivated to produce a fabric finishing agent with the desired properties. As Seugnet presents a finding that various quaternary ammonium compounds are known in the art with varying long and short chain aliphatic hydrocarbon groups, one of ordinary skill in the art could have employed the structure as claimed with a reasonable expectation of success.

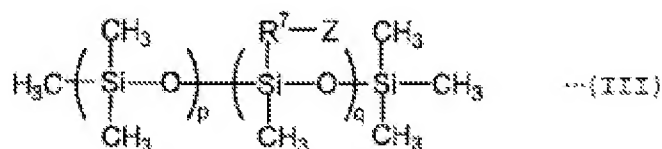
As to claim 12, which claims m is an integer between 2 and 15 and m is the number of repeat  $(R^6O)_m$  groups in the phosphate salt. Iwata teaches a phosphate salt  $(OA)_m$  where (OA) is a oxyethylene and m is an integer between 0 and 20.

As to claim 13, Iwata teaches the phosphate salt has ethylene groups and  $R_3$  and  $R_4$  groups and are compared with an  $R_5$  and  $R_6$  groups of the current invention. Iwata teaches groups  $R_3$  and  $R_4$  are alkyl or alkylene groups containing 5 to 18 carbons and therefore an aliphatic hydrocarbon group. Iwata teaches the phosphate salt contains repeating structure of oxyethylene.

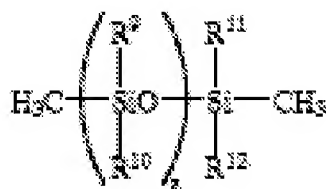
**3. Claim 4 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata et al (US 6,436,855) in view of Seugnet (US 4,118,327) and in further view of**

**Nohr et al (US 4,920,168).** Claims 4 and 14 describe that the water permeable agent further comprises a 5 to 20% weight percent of polyoxyalkylene-modified silicone represented by the formula below where

- $R^7$  is a methylene, ethylene, propylene, N-(aminoethyl) methylimino or N-(aminopropyl) propylimino group;
- and Z is a polyoxyalkylene group containing at least 20 weight percent of polyoxyethylene moieties;
- and p and q are integers of 1,000 to 100,000
- and a silicon content of 20-70 wgt %.



As to claim 4 and 14, Iwata teaches a composition that incorporates 3-20% of a polyorganosiloxane. Iwata teaches polyorganosiloxanes are represented by the general formula and each of the  $R^9$ ,  $R^{10}$ ,  $R^{11}$ , and  $R^{12}$ , independently represents a phenyl, benzyl or cyclohexyl groups and z is the average number of repeating units and an integer of 200 to 1000. Iwata teaches the polyorganosiloxanes straight chain, cross-linked, two-dimensional, or three dimensional network structures (col. 5, lines 3-25).

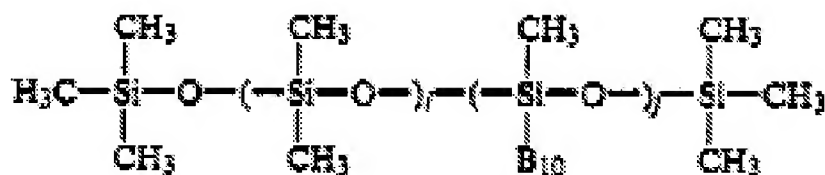


Iwata teaches that the polyoxyalkylene alkylethers have been used to impart hydrophilicity and the polydimethyl silicone has been used to prevent friction and static electricity. Iwata teaches that these two compounds have diametrically opposite characteristics of hydrophilicity and hydrophobicity and imparting both characteristics has been difficult. Iwata teaches an A component in the fiber finishing composition that includes a polyoxyethylene alkyl ether and a C component that includes a polysiloxane.

Iwata differs from the current application and does not teach a modified polysiloxane structure with a group  $R^7$  are a methylene, ethylene, propylene, N-(aminoethyl) methylimino or N-(aminopropyl) propylimino group; and a group Z which is a polyoxyalkylene group containing at least 20 weight percent of polyoxyethylene moieties.

Nohr teaches stabilized siloxane containing melt extrudable thermoplastic compositions (Title) for processing and forming fibers, more specifically polyolefin fibers (ABST). Nohr teaches the stabilized siloxane composition is useful for preparation of fibers which have hydrophilic surfaces used in the construction of diapers, incontinence products and the like (ABST). Nohr teaches the stabilized siloxane compounds are useful for polyolefins where their hydrophobic nature of the polyolefin limits their usefulness or requires effort to modify the surface characteristics.

Nohr teaches a siloxane containing additive having at least two moieties, A and B where A and B act a single molecule and B has at least one functional group of a polyoxyalkylene as shown in the figure below.



**B<sub>10</sub>** is a group that is: **(CH<sub>2</sub>)<sub>3</sub> – O – (C<sub>2</sub>H<sub>4</sub>)<sub>y</sub>(C<sub>3</sub>H<sub>6</sub>O)<sub>z</sub>R<sub>24</sub>** where **y** and **z** are integers in the range of 0 to 25 and **R<sub>24</sub>** is an alkyl group containing 1 to 4 carbons.

Nohr teaches the weight percentage of the polyoxyethylene moieties to siloxane copolymer of at least 25% (col. 5 and 6, lines 62-68 and 1-18).

It would have been obvious to one of ordinary skill in the art to employ a polyoxyalkylene modified silicone compound as taught by Nohr motivated to improve the surface hydrophilic and wettability properties of a polyolefin fiber or fabric.

### ***Response to Arguments***

4. Applicant's arguments with respect to claim 1-9 have been considered but are moot in view of the new ground(s) of rejection. The previous 35 USC 103(a) rejection over Kato is withdrawn.

5. Applicant's amended claims 1 and added new claims 10-19. A new 35 USC 130(a) rejection over claims 1-19 over Iwata in view of Seugnet is presented in this Office Action. As a result of the substantially new grounds of rejection, this Office Action is being made NonFinal.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is (571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./  
Examiner, Art Unit 1794

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art  
Unit 1794

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